

A DEVICE AND METHOD FOR FOCUSING SOLUTES IN AN ELECTRIC FIELD GRADIENT

Abstract of the Disclosure

An electrophoretic device and method for focusing a charged solute is
5 disclosed. The device includes a first chamber for receiving a fluid medium, the first
chamber having an inlet for introducing a first liquid to the chamber and an outlet for
exiting the first liquid from the chamber; a second chamber comprising an electrode
array, the second chamber having an inlet for introducing a second liquid to the
10 chamber and an outlet for exiting the second liquid from the chamber; and a porous
material separating the first and second chambers. The device's electrode array
includes a plurality of electrodes and generates an electric field gradient profile which
can be dynamically controlled. In the method, a charged solute is introduced into a
fluid medium followed by the application of a hydrodynamic force. Opposing the
15 hydrodynamic force with an electric field gradient results in solute focusing in the
fluid medium. The electric field gradient is generated by an electrode array by
individually adjusting the electrode voltages.